



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/997,082	11/28/2001	John Charles Clark	57254US002	6097

32692 7590 06/15/2005

3M INNOVATIVE PROPERTIES COMPANY
PO BOX 33427
ST. PAUL, MN 55133-3427

EXAMINER

PIZIALI, ANDREW T

ART UNIT	PAPER NUMBER
----------	--------------

1771

DATE MAILED: 06/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/997,082	Applicant(s) CLARK ET AL.	
	Examiner Andrew T. Piziali	Art Unit 1771	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 May 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) 1-9 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 10-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11/28/2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

5

DETAILED ACTION

Response to Amendment

1. The response filed on 5/25/2005 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 10-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 6,803,143 to Zuber et al. (hereinafter referred to as Zuber) in view of any one of USPN 3,573,991 to Lenfant et al. (hereinafter referred to as Lenfant) or USPN 4,897,286 to Kosuda et al. (hereinafter referred to as Kosuda).

Regarding claims 10-19, Zuber discloses a method of making a hydrophobic carbon fiber construction comprising the step of immersing a carbon fiber construction in an aqueous dispersion of highly fluorinated polymer (see the entire document including column 7, lines 19-30).

Although Zuber fails to mention electrophoretically depositing the highly fluorinated polymer on the carbon fiber construction, Lenfant and Kosuda each disclose that it is known to contact particles with a counterelectrode and electrophoretically deposit the particles on a carbon fiber construction by applying an electric current between the carbon fiber construction and the

Art Unit: 1771

counterelectrode to ensure a uniform coating on the carbon fiber construction (see entire documents including column 3, lines 65-75 of Lenfant and the paragraph bridging columns 5 and 6 of Kosuda). It would have been obvious to one having ordinary skill in the art at the time the invention was made to electrophoretically deposit the highly fluorinated polymer particles on the carbon fiber construction by applying an electric current between the carbon fiber construction and the counterelectrode to ensure a uniform coating on the carbon fiber construction.

Regarding claims 11, 13 and 19, Zuber discloses that the carbon fiber construction can be sintered (see column 7, lines 19-30 of Zuber).

Regarding claims 12-19, considering that the hydrophobic carbon fiber construction taught by the prior art is made by a method identical to the currently claimed method, it appears that the hydrophobic carbon fiber construction taught by the prior art inherently possesses a monolayer (as defined on page 3, lines 2-6 of the current specification) of particles of highly fluorinated polymer. In the event that it is shown that a monolayer does not exist, it would have been obvious to one having ordinary skill in the art at the time the invention was made to vary the voltage and/or current applied to vary the amount of polymer deposited, such that a monolayer of particles of highly fluorinated polymer was deposited based on the desired amount of polymer and because discovering an optimum value of a result effective variable involves only routine skill in the art (see column 5, lines 60-64 of Kosuda).

Regarding claims 15-16, Zuber discloses that the highly fluorinated polymer may be PTFE (see column 7, lines 19-30).

Regarding claims 17-18, Zuber discloses that the carbon fiber construction may be a woven or nonwoven carbon fiber construction (column 4, lines 3-14).

Art Unit: 1771

4. Claims 10-16 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 3,972,735 to Breault in view of any one of USPN 3,573,991 to Lenfant or USPN 4,897,286 to Kosuda.

Regarding claims 10-16 and 19, Breault discloses a method of making a hydrophobic carbon fiber construction comprising the step of immersing a carbon fiber construction in an aqueous dispersion of highly fluorinated polymer (see the entire document including the paragraph bridging columns 2 and 3).

Although Breault fails to mention electrophoretically depositing the highly fluorinated polymer on the carbon fiber construction, Lenfant and Kosuda each disclose that it is known to contact particles with a counterelectrode and electrophoretically deposit the particles on a carbon fiber construction by applying an electric current between the carbon fiber construction and the counterelectrode to ensure a uniform coating on the carbon fiber construction (see entire documents including column 3, lines 65-75 of Lenfant and the paragraph bridging columns 5 and 6 of Kosuda). It would have been obvious to one having ordinary skill in the art at the time the invention was made to electrophoretically deposit the highly fluorinated polymer particles on the carbon fiber construction by applying an electric current between the carbon fiber construction and the counterelectrode to ensure a uniform coating on the carbon fiber construction.

Regarding claims 11, 13 and 19, Breault discloses that carbon fiber construction can be sintered (see the paragraph bridging columns 2 and 3).

Regarding claims 12-16 and 19, considering that the hydrophobic carbon fiber construction taught by the prior art is made by a method identical to the currently claimed method, it appears that the hydrophobic carbon fiber construction taught by the prior art

Art Unit: 1771

inherently possesses a monolayer (as defined on page 3, lines 2-6 of the current specification) of particles of highly fluorinated polymer. In the event that it is shown that a monolayer does not exist, it would have been obvious to one having ordinary skill in the art at the time the invention was made to vary the voltage and/or current applied to vary the amount of polymer deposited, such that a monolayer of particles of highly fluorinated polymer was deposited based on the desired amount of polymer and because discovering an optimum value of a result effective variable involves only routine skill in the art (see column 5, lines 60-64 of Kosuda).

Regarding claims 15-16, Breault discloses that the highly fluorinated polymer may be PTFE (see the paragraph bridging columns 2 and 3).

5. Claims 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 3,972,735 to Breault in view of any one of USPN 3,573,991 to Lenfant or USPN 4,897,286 to Kosuda as applied to claims 10-16 and 19 above, and further in view of USPN 6,803,143 to Zuber.

Breault is silent with regards to the specific carbon fiber constructions, therefore, it would have been necessary and thus obvious to look to the prior art for conventional constructions. Zuber provides this conventional teaching showing that it is known in the art to use woven or nonwoven carbon fiber constructions (column 4, lines 3-14) Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to make the carbon fiber construction from a woven or nonwoven carbon fiber construction motivated by the expectation of successfully practicing the invention of Breault.

Response to Arguments

6. Applicant's arguments filed 5/25/2005 have been fully considered but they are not persuasive.

In response to applicant's argument that Lenfant and Kosuda are nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, Lenfant and Kosuda are at least particularly pertinent to the particular problem with which the applicant was concerned, which is forming a uniform particle layer on a substrate surface. In addition, Kosuda specifically relates to forming a uniform particle layer on a carbon fiber substrate surface.

Regarding claims 12-19, the applicant asserts that the applied prior art does not teach or suggest a monolayer of particles. The examiner respectfully disagrees. Considering that the hydrophobic carbon fiber construction taught by the prior art is made by a method identical to the currently claimed method, it appears that the hydrophobic carbon fiber construction taught by the prior art inherently possesses a monolayer (as defined on page 3, lines 2-6 of the current specification) of particles of highly fluorinated polymer. In the event that it is shown that a monolayer does not exist, it would have been obvious to one having ordinary skill in the art at the time the invention was made to vary the voltage and/or current applied to vary the amount of polymer deposited, such that a monolayer of particles of highly fluorinated polymer was deposited based on the desired amount of polymer and because discovering an optimum value of a result effective variable involves only routine skill in the art (see column 5, lines 60-64 of

Art Unit: 1771

Kosuda). It is noted that the applicant has failed to show, or attempt to show, that the carbon fiber construction taught by the prior art would not inherently possess a monolayer of particles.

The applicant asserts that there is no motivation in any of the references to create a monolayer (a layer that at least covers substantially all of the surface). The examiner respectfully disagrees. Zuber, for example, teaches a thickness of between 5 and 100 microns because a thickness of below 5 microns results in an undesired "irregular" layer due to the underlying porosity (column 6, lines 55-61). Zuber discloses that an "irregular" layer results in an undesired reduction in conductivity (column 6, lines 55-61). Zuber clearly discloses that a monolayer (a layer that at least covers substantially all of the surface) is present and desired.

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Art Unit: 1771

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew T. Piziali whose telephone number is (571) 272-1541. The examiner can normally be reached on Monday-Friday (8:00-4:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel Morris can be reached on (571) 272-1478. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

atp

GTP 6/8/05
ANDREW T. PIZIALI
PATENT EXAMINER

Terrel Morris
TERREL MORRIS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700